

Working Capital Fund Benefit/Cost Analysis, (1997-2001)

Introduction

One of the Department's objectives for the Working Capital Fund is to improve efficiency by enabling both customer and supplier organizations to make cost-conscious decisions about the products and services they use or produce, respectively. Indeed, the Department of Energy Organization Act in 1977 authorized the Secretary of Energy to use the Fund "for expenses necessary for the maintenance and operation of such common administrative services as he shall find to be desirable in the interests **of economy and efficiency.**" (Emphasis added) The purpose of this paper is to summarize what is known about whether this objective has been achieved.

Summary of Results:

- **During the five years of the Fund, the average annual costs of continuing businesses decreased by over \$8 million per year or nearly 10%. When inflation is taken into consideration, the savings from the Fund are estimated to be as high as \$15 million/year or \$75 million.**
- **While there are many qualifiers on this analysis, the evidence remains strong that the Department has achieved substantial net economic benefits from the market-like approach of the Fund to the provision of common administration services to Headquarters.**

Methodology

There are several complementary ways to evaluate the Department's progress toward this goal. One method is to analyze the Fund pricing policies directly, to assess the potential for customers to make decisions that improve efficiency. A second approach is to ask customers whether and how they have taken advantage of these opportunities. A third approach is to analyze the actual performance to observe whether the costs of administrative services have been higher or lower than before the Fund. This section discusses what is known about the Fund that bears on the first two of these methodological approaches and then describes how the third approach is structured.

The first method, pricing policy evaluation, occurs on an ongoing basis as the WCF Board reviews and modifies pricing policies. Attachment A provides a summary of the current WCF pricing policies and a description, for each business, of how an individual program office customer could reduce its WCF charges. It should be noted that there are a number of business segments that can be considered "infrastructure"--having costs that are relatively fixed in the near-term. In these cases, program office customer action to reduce their WCF charges will not directly reduce overall departmental costs. Rather, these program actions serve to shift costs between customers based on relative utilization of services. During 2001, the most controversial pricing policy discussions have been for the DOE Business Network (DOENET), where the

Board has had difficulty identifying a pricing policy that is clearly linked to the potential for cost savings.

In at least half of the two dozen pricing policies in Attachment A, there is a direct connection, frequently dollar-for-dollar, between the incentives for customers to save program funds and cost savings that will accrue to the Department as a whole. For example, a reduction of D dollars by Program P in purchases from the supply store or in order placed with the Government Printing Office will reduce by exactly D dollars both Program P's annual costs and the Department's total costs. However, in terms of aggregate dollar value, the Department's costs to operate the two main Headquarters buildings, Forrestal and Germantown, and the Department's costs to operate the telephone system, the network, and the payroll system account for over 60 percent of Fund expenses. Therefore, while there are significant qualitative merits to the various Fund pricing policies, there are also limits on the abilities of those policies to effect proportionately large changes in total costs.

An example of the second analysis method, asking customers whether they have acted to control consumption levels, is the DOE Inspector General's survey of program offices for its October 1998 report on the Working Capital Fund. The IG concluded, "In our survey of program customers, the majority stated that they had taken a proactive approach to reduce overhead costs through reductions in use of office space, telephone lines, supplies, and mail stops. Also, business line managers continued to contribute to cost reductions." It should be noted that 1997 and 1998 customer surveys by the Human Resources and Administration organization – then the parent organization for the activities included in the Fund – revealed three general opinions about the Fund:

- The services included in the Fund, such as space, telephones, mail, network, and payroll, were deemed to be the most important services provide by HR&A;
- There tended to be a higher level of customer satisfaction for the services provided through the Fund than for services not provided through the Fund; and
- There was a consensus that the performance of the HR&A organization in those years was at least as high, if not higher, than in the prior year.

No formal follow-on customer surveys have been conducted since the 1998 work by the Inspector General and Human Resources and Administration. However, as discussed further below, the survey evidence that is available suggests that the service levels for businesses included in the Fund have been at least as high, if not higher, since the Fund was created than in previous years. If this is true, then it follows that an efficiency analysis can focus on changes in cost levels, holding benefits levels constant. This is the third of the three methodologies.

This paper uses the third of the methodology approaches outlined above, comparing certain DOE Headquarters administrative costs for time periods before and since creation of the Fund in FY 1997. While it is not possible to determine whether spending levels would have been higher or lower in the years since FY 1997 had the Fund not been created, this "before-and-after" can shed some light on the impacts of creating the Fund. In algebraic terms, the economic efficiency of Fund activities in period t can be expressed as a ratio of benefits (B) to costs (C), as follows:

$$E_t = \frac{B_t}{C_t}$$

The question is whether the efficiency (E) for these activities was higher before the Fund (t=BF) than with the Fund (t=WF). That is, is the variable X in the following expression positive or negative.

$$X = E_{WF} - E_{BF}$$

Since we are unable to observe benefits directly, we have structured the analysis to isolate costs by assuming that benefits are constant between time periods, as shown in the relationships below.

$$X = \frac{B_{WF}}{C_{WF}} \quad \text{minus} \quad \frac{B_{BF}}{C_{BF}}$$

If benefits are held constant, then X, the net efficiency change for the Fund, becomes positive when C_{WF} -- the costs with the Fund -- are less than C_{BF} -- the costs before the Fund.

As discussed further below, the assumption of equal benefits before and after the Fund is problematic because the content of the Fund services has not remained perfectly constant over time. Among other things, businesses have been added to and removed from the Fund over the past five years. To adjust for this phenomenon, we are using the concept of “continuing businesses.” This concept is used in the private sector to distinguish between trends due to acquisition or divestiture of businesses and trends that reflect changes for those activities that were managed throughout the period of analysis – the “continuing businesses”. Since FY 1997, some activities have been added to or removed from the Fund, so their inclusion would distort the analysis. Specifically:

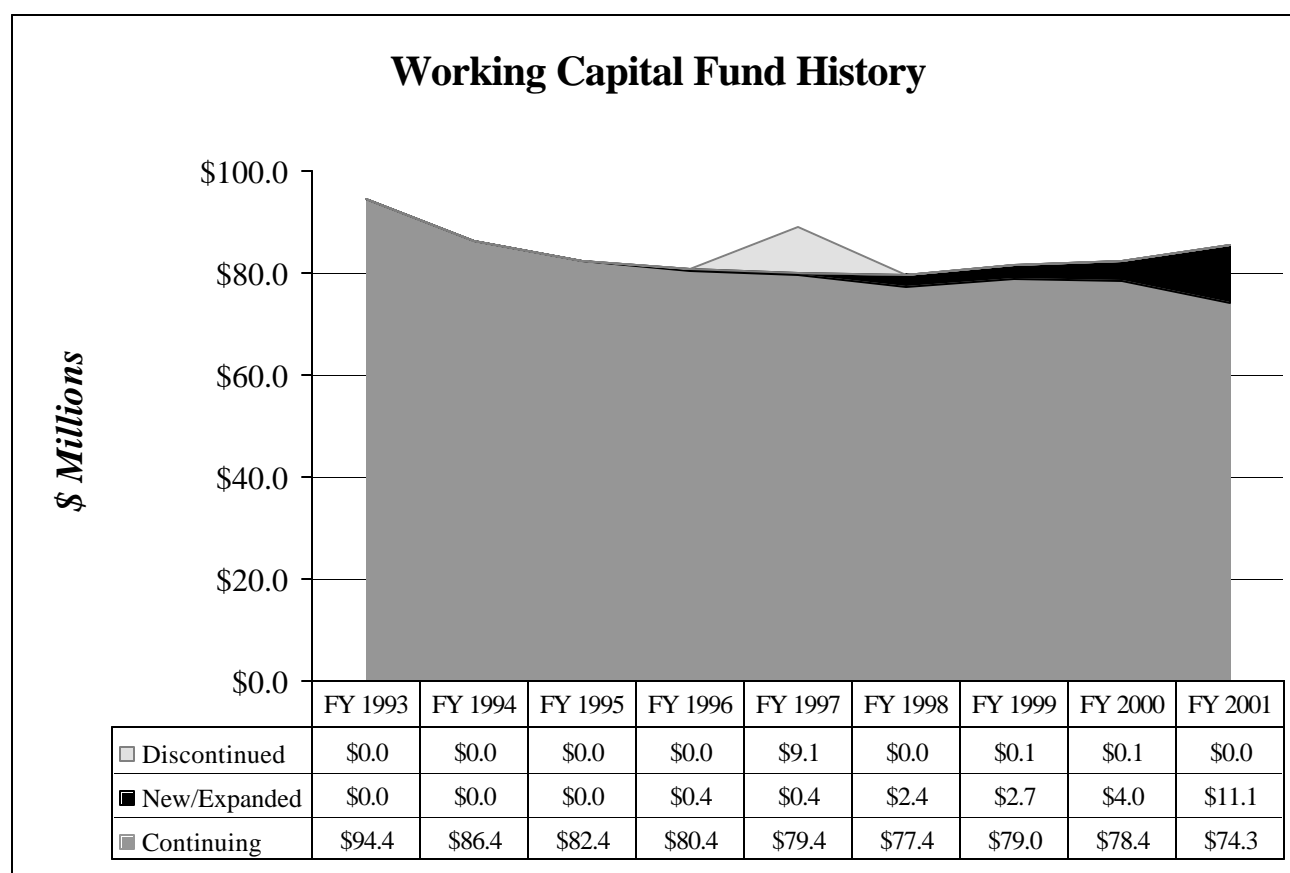
- The DCAA Audits business line was in the Fund for one year, FY 1997, only; it was removed in the FY 1998 budget process;
- In FY 1998, the Payroll business line was added;
- The Executive Information System business line was added to the Fund for FY 1999 and FY 2000, but was removed from the Fund for FY 2001;
- During FY 2000, some customers financed improvements of their office space through supplemental payments into the Fund, and for FY 2001, the Board embarked on a policy of making approximately \$3 million/year in upgrades in Headquarters facilities; and
- In FY 2001, the DOENet segment was added to the Network business line, nearly doubling the size of that line.

A further methodological issue is that the cost structure of the Fund businesses during the FY 1997-2001 does not always match the cost classifications during the years prior to the Fund. For example:

- Prior to FY 1997, the costs of the Information Management business lines were grouped in two classification, Telephone and Desktop, and Network costs were distributed between these lines; and
- The costs of copying paper were borne by what became the Supplies business line, rather than the Copying business line.

Also, the Contract Closeout business was not a discrete function during the entire historical period, FY 1993-FY 1996, that is being used in this comparison.

To permit an accurate comparison of costs before and after the Fund, therefore, we needed to remove certain activities from the analysis, and we also needed to group the continuing businesses into larger categories to match pre-Fund cost records. Attachment B provides the data used for this analysis and the figure below tracks continuing businesses as a whole over the 9-year period of analysis. As noted in the attachment, we are using “obligations” as a measure of business costs for the historical period, and “earnings” as the measure of costs during the FY 1997-2001 period. Earnings, it should be noted, represent the cost of the business as seen by the customer.

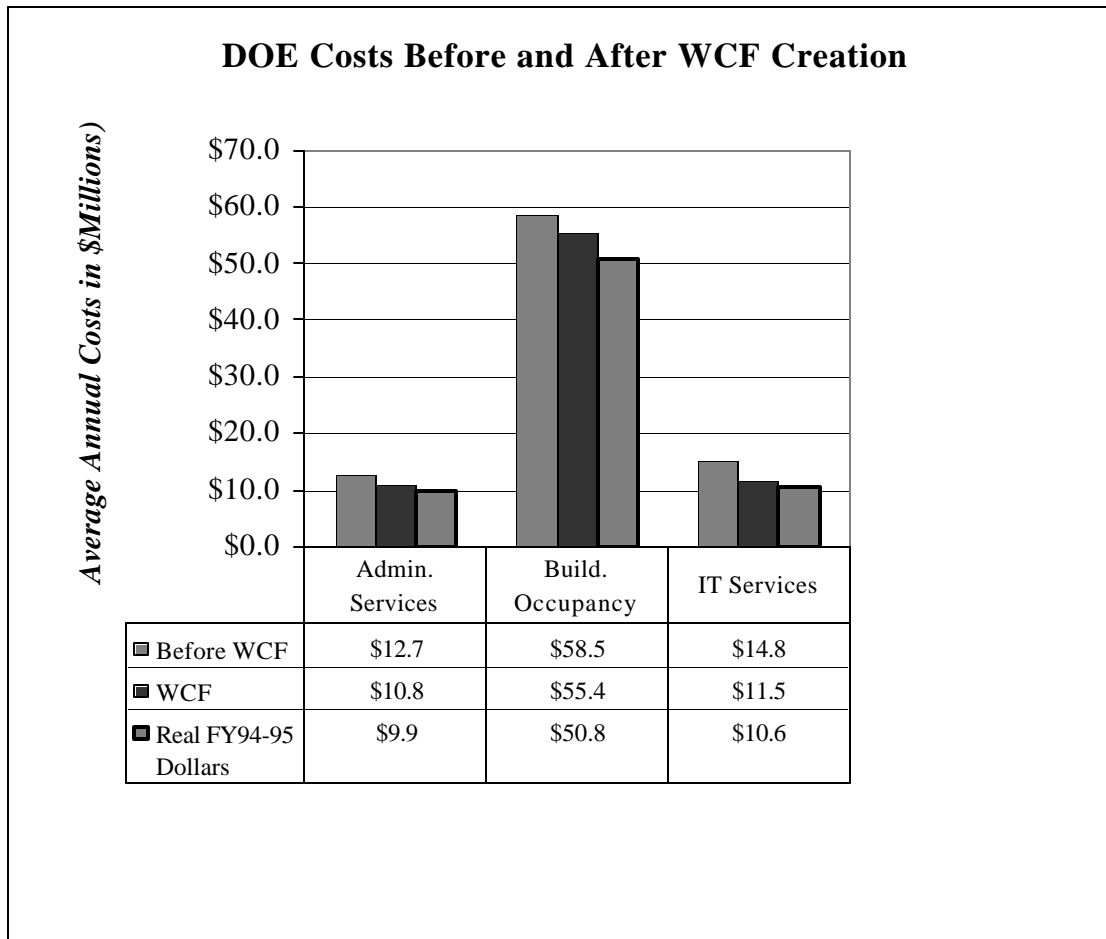


Analysis

As the table below demonstrates, before accounting for inflation effects, the average annual cost of continuing businesses in the Fund was lower during the five years of Fund operation than in the four years (FY 1993-6) before the Fund was created. Specifically, the average annual costs in FY 1993-96 for all continuing businesses was \$86.0 million, whereas the five-year average for Fund billings to customers was \$77.7 million, a reduction of \$8.3 million per year, or nearly 10 percent. Over a five-year period, total reductions would be \$41.5 million.

Average Annual Cost Patterns by Business Area (\$ Millions)				
	Average Annual Costs, FY 1993-96	Average Annual Costs, FY 97-2001	Reduction (\$Millions)	Percent Reduction
Admin. Services	\$12.7	\$10.8	\$1.9	15%
Building Occupancy	\$58.5	\$55.4	\$3.1	5%
IT Services	\$14.8	\$11.5	\$3.3	22%
Total	\$86.0	\$77.7	\$8.3	10%

While all three sets of businesses showed reductions in costs between the pre-WCF and WCF periods, these average annual costs decreased by different amounts and proportions. The largest cost reduction, in both absolute and percentage terms, has been in IT services. The OMB deflator series for Federal program costs establishes a cost index of .97 for the FY 1994-5 period, the mid-point of the four –year historical period. The comparable index for the FY 1999 mid-point of the five-year Fund period is 1.062, reflecting a 9 percent overall inflation rate between the two periods under analysis. The following figure shows, by category of business, both the before-and-after WCF cost data from the previous table and an estimate of the WCF costs with the effects of inflation removed. Excluding inflation effects, the aggregate WCF cost reduction increases to nearly \$15 million per year.



Discussion

There are a number of factors that have not been taken explicitly into consideration in this analysis or that have been dealt with by assumption rather than empirically. This section discusses these factors in terms of whether, had they been included, they would have added to or detracted from our conclusions about the net efficiency of the Fund.

Items potentially adding to net benefits

- In the analysis above, the cost metric for the period during which the Fund has operated was the billings to customers, rather than business expenses. In fact, the Fund has had net earnings (billings minus business expenses) of approximately \$6 million over the first five years of operation, or \$1.2 million per year. If business expenses were used instead of customer-experienced expenses, the average annual costs, in nominal dollars, would be further reduced by \$1.2 million, adding a further 14 % to the net benefits of the Fund.

- The Fund uses business-type financial accounting that capitalizes certain costs but reflects depreciation on the current capital stock. Among other things, this has permitted the Fund to accumulate and invest cash to replace or upgrade capital equipment, and there have been significant upgrades in telephone switching equipment and copiers.¹
- Product substitution and choice: The Fund gives customers the opportunity to make decisions on the mix, level, and quality of services. This has allowed customers to adapt to technological changes and to substitute, for example, LAN connections for telephone connections. It has also allowed customers to substitute for activities that are financed outside the Fund. For example, the flexibility to acquire supplies, copying, or printing services may have allowed customers to make better use of current Federal staff and reduced use of contractors to prepare and disseminate information. Or, the availability of enhanced telephone or network services may have reduced the need for travel. It cannot be proven empirically that better information and broader flexibility for managers will reduce in more cost-effective operations, but expanded choice is, in directional terms, an advantage of the Fund compared to the pre-Fund years, when services were rationed by non-market means.

Items Potentially Reducing Net Benefits

- Fund administrative costs (direct): The Department has obligated approximately \$363,000 (\$73,000/year) for contractual services related to the administration of the Fund. These costs include the development and maintenance of the monthly billing system plus professional assistance to business lines in preparation of five-year plans. The costs have been financed through unbilled contributions to the Fund from the Office of Management and Administration, hence they are not included in business earnings and would be additive to the Fund costs discussed above.
- Headquarters Population Decreases: From the mid-point of the base period under analysis to the mid-point of the five years of Fund operation, Headquarters personnel levels declined approximately 18% from an estimate 7,700 to 6,300. This includes not only DOE Federal staff but also support services contractors and other staff occupying space within the Headquarters complex. It is unlikely that, without the Fund, there would have been an 18% decrease in spending levels, since some Fund businesses finance infrastructure that is characterized by costs that are fixed in the near-term. However, it needs to be acknowledged that at least some of the observed cost savings may have occurred without the creation of the Fund.

Items with Uncertain Impact

- The parent organizations of Fund businesses (CFO, MA, and CIO) subsidized the businesses and their customers by an estimated 14% of billings in FY 2001. Most of this subsidy is attributable to the fact that the Fund does not pay for an estimated \$8 million in

¹ The building upgrades have been factored into the analysis by deleting WCF earnings associated with tenant improvements.

salaries and benefits for Federal employees that are associated with the businesses, including the small central staff associated with billing and management oversight. During the period of Fund operation, there is evidence of a gradual but minor (1%/year) decline in the number of Federal employees supporting the operations of continuing businesses, as defined in this study. However, it is unclear whether this trend would have extended back in time to the period before the Fund was created, since the parent organization's staffing decreased substantially in the mid-1990's, during the same period the Fund was being planned. It is also unclear whether and how this decline could be attributed to the creation of the Fund rather than to other factors.

- It is possible that some customer organizations have taken advantage of the opportunity to acquire services from outside vendors rather than through the Fund organizations. To the extent that this has occurred, then the savings estimates provided above overstate the total net benefits of the Fund. However, the availability of alternatives may also have stimulated Fund businesses to become more competitive in both pricing and quality. The evidence on this point is very limited. Probably the strongest evidence is the drop-off in customer interest in using the Fund for computer hardware repair services, when new equipment purchases with warranties may have become more attractive.

Attachment A

WCF Pricing Policy Summary, Start of FY 2002			
Business/Segment	Summary Pricing Policy	How Customers Can Save Themselves Money	How Customer Incentives Can Save DOE Money
Supplies/Paper Clips	Actual costs of vendor at supply store.	Reduce use of supplies	Reduce use of supplies
Mail			
Internal Distribution	\$10,500 per year per mail stop	Reduce No. of stops, do own local sort.	Reduce contractor staffing.
External	Actual USPS meter or FEDEX charges	Reduce outgoing mail.	Reduce outgoing mail.
Copying			
Central copiers	\$.027 per page	Reduce copies	Reduce copies
Convenience copiers	Actual lease/maintenance cost plus \$.01/copy (paper)	Reduce copies, use central copiers, reduce clerical staff	Reduce copies, copier rentals, clerical staff
Color copies	\$.50 per page	Reduce copies, use B&W	Reduce copies, use B&W
Printing and Graphics			
Direct Printing	Direct passthrough of GPO charges	Reduce quality/quantity of printed goods	Reduce quality/quantity of printed goods
Overhead	% of base period actual usage		
Stationary	Direct charge for stationary	Reduce stationary use	Reduce stationary use
Specialty graphics	Direct charge	Reduce specialty graphics	Reduce specialty graphics
Building Occupancy			
Basic operations	Annual lease based on GSA square footage values, with pro rata allocation of common areas	Reduce space usage for the individual organization	Reduce DOE's use of commercial space outside FSTL and GTN
HQ-wide Improvements	\$3 million pro rated by basic rent distribution	NA, except vote on Board for most important improvements	NA, except fund most important improvements
Local alterations	Pay direct costs for improvement	Minimize local improvements	Minimize local improvements
Electronic services	\$900 K/yr distributed by rent	NA	NA

Business/Segment	Summary Pricing Policy	How Customers Can Save Themselves Money	How Customer Incentives Can Save DOE Money
Telephones			
HQ Infrastructure	\$5 million/year distributed monthly on the basis of telephone lines	Reduce organization's number of telephone lines	NA
Local calls	Local charges distributed based on no. of "Dial 9" calls	Reduce number of calls.	NA
Long Distance calls	Passthrough of GSA FTS 2001 charges to organization	Reduce use of long-distance calls. Use e-mail	Reduce use of long-distance
Network			
HQ WAN plus ISP	\$3.4 million distributed based on no. of LAN connections	Reduce number of LAN connections	NA
DOENet	\$2.7 million distributed based on % of usage in prior 6 months, with CHRIS usage billed by employee	Reduce usage and reduce Federal staff	NA
Desktop			
Infrastructure	50% of Help Desk and assisted workstations distributed on the basis of inventory of workstations	Reduce no. of workstations	NA
Repair	Materials and Time (\$75/hr)	Reduce repairs. Purchase warranties	Reduce contractor labor
Contract Closeout	Charge by the number and type of instruments closed out	Reduce number of separate instruments and use more streamlined procurement methods (fixed price versus cost-type)	Limit contractor labor for closeout. Return balances to DOE
Payroll and CHRIS	Annual charge based on number of employees on-board at SOY	Limit number of employees. Avoid duplicate system costs	Limit no. of employees. No immediate impact on payroll or CHRIS operating costs but deters duplicate system costs
On-Line Learning			
Overhead	Distributed based on seats subscribed for prior year	Reduce no. of seats acquired.	NA
Direct	Direct charge per subscription	Reduce no. of subscriptions or reduce other forms of more expensive training	Reduce other forms of more expensive training.

Attachment B									
Working Capital Fund Financial Evaluation Data									
	(Obligations in \$ Millions)				(Earnings in \$ Millions)				
	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
Supplies/PaperClips	\$3.7	\$2.8	\$3.1	\$3.3	\$2.6	\$2.8	\$3.0	\$2.8	\$2.9
Mail	\$3.4	\$3.4	\$2.2	\$4.6	\$2.2	\$1.9	\$1.7	\$1.6	\$1.7
Copying	\$1.5	\$1.1	\$1.3	\$1.0	\$2.2	\$2.7	\$2.5	\$2.7	\$2.4
Printing/Graphics	\$5.7	\$5.4	\$4.3	\$3.8	\$3.9	\$3.3	\$3.5	\$3.5	\$4.1
Building Occupancy	\$60.9	\$60.4	\$57.3	\$55.2	\$56.4	\$55.5	\$57.4	\$56.1	\$51.8
Improvements					\$0.0	\$0.0	\$0.0	\$1.3	\$4.6
Telephones	\$9.2	\$6.4	\$6.1	\$7.1	\$6.8	\$6.6	\$6.3	\$7.0	\$6.8
Desktop	\$10.0	\$6.9	\$8.1	\$5.4	\$2.3	\$1.5	\$1.6	\$1.4	\$1.2
Network					\$3.1	\$3.1	\$3.1	\$3.2	\$3.4
DOENet					\$0.0	\$0.0	\$0.0	\$0.0	\$2.7
Contract Closeout				\$0.4	\$0.4	\$0.4	\$0.6	\$0.5	\$0.7
Payroll					\$0.0	\$1.9	\$2.1	\$2.2	\$3.1
CHRIS					\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
EIS					\$0.0	\$0.0	\$0.1	\$0.1	\$0.0
Audits					\$9.1	\$0.0	\$0.0	\$0.0	\$0.0
On-Line Learning					\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Total	\$94.4	\$86.4	\$82.4	\$80.8	\$89.0	\$79.8	\$81.7	\$82.5	\$85.4
Continuing :	\$94.4	\$86.4	\$82.4	\$80.4	\$79.4	\$77.4	\$79.0	\$78.4	\$74.3
Admin. Services	\$14.3	\$12.7	\$10.9	\$12.7	\$11.0	\$10.7	\$10.6	\$10.6	\$11.0
Building Occupancy	\$60.9	\$60.4	\$57.3	\$55.2	\$56.4	\$55.5	\$57.4	\$56.1	\$51.8
IT Services	\$19.2	\$13.3	\$14.2	\$12.5	\$12.1	\$11.2	\$11.0	\$11.7	\$11.4
Discontinued	\$0.0	\$0.0	\$0.0	\$0.0	\$9.1	\$0.0	\$0.1	\$0.1	\$0.0
New/Expanded	\$0.0	\$0.0	\$0.0	\$0.4	\$0.4	\$2.4	\$2.7	\$4.0	\$11.1